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A REVISION OF THE GENUS MORMOOPS.

BY JAMES A. G. REHN.

During the preparation of this paper quite an interesting series of forty-nine specimens has been examined, forty-four of them loaned from the collection of the United States National Museum, through the kindness of Mr. Gerrit S. Miller, Jr., of that institution. The author also wishes to acknowledge his indebtedness to Dr. C. Hart Merriam for the loan of two Jamaican specimens from the collection of the U. S. Biological Survey; to Prof. D. G. Elliot for the loan of one specimen from San Domingo from the collection of the Field Columbian Museum, Chicago, and to Dr. F. A. Jentink, of the Leyden Museum, for kindly furnishing information concerning two Cuban specimens in the collection under his care.

The material examined covers all the localities from which the genus has been recorded with but few exceptions, and in such cases the specimens are not available for examination.

MORMOOPS Leach.

1820. *Aëlla* Leach, Trans. Linn. Soc. London, XIII, p. 70. Type, *Aëlla cuvieri*, a mutilated and almost unrecognizable specimen of *M. blainvillii*.
 1820. *Mormoops* Leach, Trans. Linn. Soc. London, XIII, p. 76. Type, *M. blainvillii* Leach.
 1840. *Lobostoma* Gundlach, Wiegmann's Archiv. für Naturgesch., VI, band I, p. 357 (part).
 1856. *Mormops* Peters, Monatsber. K. Preuss. Akad. Wissensch., Berlin, p. 410.

Generic Characters.—Crown of the head greatly elevated above the face line; ears actually or nearly united basally by the internal margins; nostrils not margined by extensive cutaneous developments. Facial portion of skull bent strongly upward, the basi-cranial and facial axes being thus almost at right angles. Dentition i. $\frac{2-2}{2-2}$, c. $\frac{1-1}{1-1}$, p. $\frac{2-2}{3-3}$, m. $\frac{3-3}{3-3}$.

History.—The genus *Mormoops* was founded by Leach in 1820¹ on his species *M. blainvillii*, which was described from Jamaica. In the same work, having precedence by a few pages (p. 70), is a

¹ Trans. Linn. Soc. London, XIII, p. 76.

genus *Aëlla*, which Leach described from a mutilated specimen of *Mormoops blainvillii*, according to Dobson,² who examined the type. While the genus and species *Aëlla cuvieri* have page priority over *Mormoops blainvillii*, the very poor definition and absolute unidentifiability of the former (without a close examination of the type such as Dobson has made) should give occasion to use the better defined, almost simultaneous and universally recognized name. Gray,³ in speaking of the occurrence of the genus in Cuba, placed *Mormoops* and the genus *Chilonycteris* in the tribe *Noctilionina* in the vicinity of the *Taphozoi*, on account of the possession of no true nose leaf. In 1840, Gundlach⁴ described a specimen of this genus from Cuba as *Lobostoma cinnamomeum*, and Peters⁵ and Saussure⁶ both confused Leach's species with another form of the genus to which Peters later⁷ gave the name of *megalophylla*. Saussure, in the above-mentioned paper, placed the genus in a subtribe of the "Noctilioniens," which he designates as the "*Mormopsins*," and associates *Chilonycteris* with it in the same division. In 1865, Peters,⁸ in a revisionary table of the order, placed *Mormops* (*Mormoops* Leach), *Chilonycteris* and *Pteronotus* in a subfamily *Mormopes* of the family *Phyllostomata*. Dobson⁹ considered these allied genera as constituting a subfamily *Lobostominae* and group *Mormopes* of the *Phyllostomatidae*. Quite recently Miller¹⁰ has described a form allied to *M. megalophylla*, inhabiting the island of Curaçao, as *Mormoops intermedia*.

General Relations.—The three genera, *Mormoops*, *Chilonycteris* and *Dermonotus* (*Pteronotus* Auct.¹¹), comprise a well-defined subfamily, the differential characters of which are the absence of a distinct nose leaf and the presence of leaf-like appendages on the lower lip. The former character is shared by the genus *Centurio*, but the latter character easily distinguishes the group from the *Centurioninae*. The genus *Mormoops* may be distinguished from

² *Catal. Chiropt. Brit. Mus.*, p. 454.

³ *Ann. Nat. Hist.*, IV, p. 3, 1839.

⁴ Wiegmann's *Arch. f. Naturgesch.*, VI, bd. I, p. 357.

⁵ *Monatsber. k. preuss. Akad. Wissensch.*, Berlin, 1856, pp. 410-415.

Abhandl. k. preuss. Akad. Wissensch., Berlin, 1856, pp. 287-301.

⁶ *Revue et Magasin de Zoologie*, 2d ser., XII, pp. 290-293.

⁷ *Monatsber. k. preuss. Akad. Wissensch.*, Berlin, 1864, p. 381.

⁸ *Monatsber. k. preuss. Akad. Wissensch.*, Berlin, 1865, p. 257.

⁹ *Catal. Chiropt. Brit. Mus.*, pp. 446-447.

¹⁰ *Proc. Biol. Soc. Washington*, XIII, p. 160.

¹¹ *Vide* Gill, *Proc. Biol. Soc. Washington*, XIV, p. 177.

the other two genera by the greatly elevated brain-case, which throws the basi-cranial axis almost at right angles to that of rostrum, and in the presence of prominent internal, basally annectant, flaps to the ears.

After a study of the names applied to this section as a group, I have concluded to designate the subfamily, containing *Mormoops*, *Chilonycteris* and *Dermonotus* (*Pteronotus* Auct.), as the *Mormoopinae*, which term I have used in a previous paper.¹² The name *Lobostominae* of Dobson is not available as *Lobostoma* is a synonym of *Mormoops* and *Chilonycteris*.

Key to the Forms.

- a.—Chin pad slightly divided. Cutaneous lap connecting the inner side of the conch with the supraocular region united with its fellow of the opposite side.
- b.—Greatest thickness of the first upper premolar centrally located, the tooth being crudely rhomboid in outline,
blainvillii Leach.
- bb.—Greatest thickness of the first upper premolar posteriorly located, the tooth being subconoid in outline,
b. cinnamomea (Gundlach).
- aa.—Chin pad considerably divided. Cutaneous lap connecting the inner side of the conch with the supraocular region not united with its fellow of the opposite side except at the extreme base.
- b.—First upper premolar narrow, centrally constricted, the posterior margin well separated from the second premolar.
- c.—Second upper premolar triangular in basal outline, equally broad as long, the internal lobe of the tooth moderately developed,
megalophylla (Peters).
- cc.—Second upper premolar much broader than long, the internal lobe of the tooth very much developed,
m. senicula Rehn.
- bb.—First upper premolar rather broad, subrectangular in outline, in contact with or very slightly separated from the second premolar, . . . *m. intermedia* Miller.

Mormoops blainvillii Leach.

1820. *Aëlla Cuvieri* Leach, Trans. Linn. Soc. London, XIII, p. 71 (founded on a badly mutilated specimen).

1830. *Mormoops Blainvillii* Leach, Trans. Linn. Soc. London, XIII, p. 77, tab. VII.

¹² *Proc. Acad. Nat. Sci. Phila.*, 1901, p. 297.

1872. *Mormops Blainvillii* Peters, Monatsber. k. preuss. Akad. Wissensch., Berlin, p. 359 (part).

1878. *Mormops blainvillii* Dobson, Catal. Chiropt. Brit. Mus., p. 456.

Type Locality.—Jamaica.

Distribution.—Jamaica.

General Characters.—Size rather small; ears with the prominent internal wing united with its fellow; lower margin of chin-lappet with two central projections; labial fold very deeply cleft centrally.

Head.—Broad, long and shallow. Ears very large, the lower margins extending forward to the commissure, thus, with the anterior trend of the internal connecting membrane, forming a cavity in which is located the rather minute eye; internal connecting membrane carried forward and connecting with its fellow posterior to the nasal region; the apex of the ear with a concave emargination; internal ridge well developed, extending to the tip of the ear, inferiorly rather deep, the tip broadly rounded; antitragus high, apex circular; tragus rather large, apically with an additional subanceolate, subpetiolate process, inner border with a median emargination, outer border inferiorly emarginate, centrally with a rounded process. Eye with wart near both the anterior and posterior corners. Nostrils opening in the lateral portions of a fleshy disk, which has the superior margin concavely emarginate, below which the disk bears a median ridge; nasal apertures surrounded by slightly raised margins; the central formation laterally flanked by rectangular fleshy processes; upper lip deeply notched opposite the first upper premolar, an acute process projecting forward from the commissure. Chin-lappet of lower lip subquadrate, upper margin with a central concavity, lower margin with a pair of small processes in the center; surface papillose. Labial fold ample extending much below the chin-lappet, deeply divided into four portions by incisions, one median and two lateral.

Limbs.—Forearm moderately long, considerably bowed; third finger rather long, very slender, the latter character applying to all the digits; thumb delicate. Femora, tibiae and feet long and very slender; calcanea long, about equaling the tibiae.

Membranes and Fur.—Membranes very thin and semi-transparent, very finely tucked and wrinkled by cross nerves, the pattern of the latter being very regular; propatagium large, the anterior border totally free; uropatagium ample, extending quite a distance

beyond the tail. Fur long, soft and silky, the posterior part of the neck with a collar of longer hair; throat and chin with short floccose fur; ectopatagium considerably furred; forearm not furred; upper lip heavily haired.

Color.—General tint above and below orange-rufous, slightly darker over the shoulders, palest around the head and on the throat.¹³ Membranes pale chestnut.

Skull.—Rather light and fragile; cranial portion abruptly elevated and thrown forward; foramen magnum very large and wholly above the level of the orbital region. Brain-case comparatively large, and forming a right angle with the line of the face; auditory bullæ moderately prominent, projecting under the glenoid fossæ, the latter being large and subquadrate. Rostrum low, the upper surface deeply channeled centrally; palate considerably excavated, posterior projection narrow, the cleft acute-angulate with narrowly rounded apex; zygoma slightly projecting, sublamellate. Mandible rather long, thin, moderately deep; condyle greatly elevated; coronoid process low.

Teeth.—Central pair of upper incisors much longer than the small lateral pair, flat, the cutting edge bilobate; upper canines long and falciform, the tips slightly spread; first upper premolar with the basal outline of the tooth crudely rhomboid; second upper premolar with a large caniniform, posteriorly placed cusp; upper molars broad, the first and second with W-shaped arrangement of the ridges, the protocone being more strongly developed on the first than on the second molar; third molar transverse, with N-shaped fold (para-hypoconoid) and a marked protocone. Lower incisors equal in size, trilobate; canines moderately long, the bulk of the tooth being anterior; premolars with the same general unicuspidate form, the cusp of the first being placed anterior to the centre of the

¹³ The color is best seen by examining the specimen while immersed in alcohol, the wet specimen taken from the preservative appearing much darker. Mr. Osborn (*Proc. Zool. Soc. London*, 1865, p. 72) describes the fur of a freshly killed specimen as being bright chestnut, above rather paler. The same writer (p. 73) observes that the tint varies from a sandy buff to deep reddish-brown. It is possible from this that two marked phases exist. Since writing the above I have been enabled to examine a skin from the collection of the United States National Museum. My notes on it are as follows: General color a rufous-orange tint, suffused above with smoky brown, this tint restricted to the tips of the hair, and strongest on the lateral portions of the back and rump; long hair on the interscapular region naturally parted showing a patch of the lighter general color. Membranes brownish-black.

tooth, cusps of the first and third of equal length, longer than the second; molars with five cusps, the anterior one low and not prominent, the posterior four tall and sharp.

Measurements.—Average of two Jamaican specimens: Length of head and body, 50 mm.; head, 15.7; tragus, 4.2; forearm, 44.5; thumb, 6.2; third finger, 81.5; tibia, 20; calcaneum, 19.5; foot, 8.1; tail, 28.3.

Remarks.—This species is not liable to be confused with any other form except the subspecies *cinnamomea*, which is distinguished by the outline of the first upper premolar. From *M. megalophylla* and its subspecies this species is immediately distinguished by the form of the ears, the chin-lappet and the labial folds.

Specimens Examined.—Two alcoholic specimens and one skin: Jamaica (Coll. Biological Survey); Moneague, St. Ann, Jamaica (Coll. Biological Survey); Kingston, Jamaica (skin) (Coll. U. S. Nat. Mus.).

***Mormoops blainvillii cinnamomea* (Gundlach).**

1839. *Mormops Blainvillii* Gray (not of Leach), Ann. Nat. Hist., IV, p. 3.

1840. *L[obostoma] cinnamomeum* Gundlach, Wiegmann's Archiv. für Naturgeschichte, VI, bd. I, p. 357.

1872. *Mormops Blainvillii* Peters, Monatsber. k. preuss. Akad. Wissensch. Berlin, p. 359 (part).

1873. *M[ormops] Blainvillii* Gundlach, Anales Socied. Esp. Hist. Nat., I, cuad. 3, p. 244.

Type Locality.—Caseta St. Antonio el Fundador, Cuba.

Distribution.—Cuba, San Domingo and Mona Island (in the Mona Island passage between San Domingo and Porto Rico).

General Characters.—Similar to the Jamaican *M. blainvillii*, but the first upper premolar attains its greatest thickness posteriorly, the outline of the tooth being subconoid with the apex directed forward.

Membranes, ears and other external characters as in *Mormoops blainvillii*.

Teeth.—The first upper premolar greatly expanded posteriorly on the internal portion, the cingulum forming a heavy raised border to a deeply impressed valley; the whole structure giving the tooth a subconoid or subpyriform outline, the apex being formed by the anterior border of the cingulum.

Color.—General tint walnut-brown above, ecru-drab beneath,

the hair of the upper surface basally the same tint as the lower surface. Ears and membranes blackish-brown.

The Mona Island specimens are all uniformly colored, but a San Domingo specimen (No. $\frac{1109}{202}$ Field Columb. Mus.) is ochraceous above, slightly darker toward the tips of the hair, the tint of the lower surface being tawny ochraceous; two Cuban specimens examined are identical with true *blainvillii* in coloration. From the evidence available it is seen that this form presents two color phases, one brownish, the other ochraceous.

Measurements.—Average of ten specimens: Length of head and body, 51.2 mm.; head, 16.8; ear, 15.1; tragus, 4.4; forearm, 44.5; thumb, 6.6; third finger, 83.1; tibia, 19.5; calcaneum, 19.4; foot, 8.5; tail, 25.8.

Remarks.—The difference in the form of the first upper premolar exhibited by this form is quite striking, and is constant in the series of specimens examined. No difference can be detected between the specimens from Mona Island and those from San Domingo. While no intergradation is known to occur with *M. blainvillii*, in view of the slight differentiation I prefer to call this form a race and not a species.

Specimens Examined.—Twelve—three skins, nine alcoholics:

Baracoa, Cuba. Two alcoholics (Coll. U. S. Nat. Mus.).

Mona Island, Porto Rico. Seven specimens—two skins (with skulls), five alcoholics (Coll. U. S. Nat. Mus.).

San Domingo. Two alcoholics (Coll. Acad. Nat. Sci. Phila.).

Aquacate, San Domingo. One skin with skull (Coll. Field Columb. Mus.).

***Mormoops megalophylla* (Peters).**

1856. *M[ormoops] blainvillii* Peters (not of Leach), Monatsber. k. preuss. Akad. Wissensch., Berlin, p. 411. ("Cuba.")

1856. *Mormoops Blainvillii* Peters (not of Leach), Abhandl. k. preuss. Akad. Wissensch., Berlin, p. 289, taf. 1, figs. 1-5. ("Cuba.")

1860. *Mormops Blainvillii* Saussure (not of Leach), Revue et Magazine de Zoologie, 2e ser., XII, p. 290, Pl. XV, fig. 5.¹⁴ (Mexico.)

1864. *Mormops megalophylla* Peters, Monatsb. k. preuss. Akad. Wissensch., Berlin, p. 381. (Mexico.)

1872. *Mormops megalophylla* Peters, Ibid., p. 359. (Mexico and Venezuela.)

1878. *Mormops megalophylla* Dobson, Catal. Chiropt. Brit. Mus., p. 455. (Dueñas, Guatemala, Colombia and South America.)

¹⁴ There is no way of telling to which form of the species this reference properly pertains.

1879. *Mormops megalophylla* Alston, Biol. Cent.-Amer., Mamm., p. 37. (Part.) (Mexico [form?]; Tehuantepec.)
1893. *Mormops megalophylla* Thomas, Journ. Trinidad Field Naturalists' Club, I, No. 7, p. 162. (Trinidad.)

Type Locality.—As originally noticed (see above) this form was supposed to have come from Cuba, but Peters in his paper, in which the name *megalophylla* was proposed, shows that the species is from Mexico. Examined in the light of present material, it is seen that the typical form of the species is limited in Mexico to the southern portion and Yucatan, which section should be regarded as the type locality. This is ascertained by an examination of Peters' figure mentioned above and by comparing it with specimens; the differential characters of the races would be visible in the figure, but it clearly represents the form to which I have limited it.

Distribution.—Southern Mexico and Yucatan, south as far as Colombia, northern Ecuador,¹⁵ Venezuela and Trinidad. Some specimens recorded from "South America" no doubt came from the northern portion of that vast continent.

General Characters.—Internal connecting membrane of ear not united with its fellow of the opposite side, except at extreme base; chin-lappet broadly and deeply divided. Skull with the rostral portion much inflated.

Head.—Ear large, not high; apex subtruncate; the internal connecting membranes rather low, only confluent at the extreme base on the rostrum, this section developing a pair of subcircular appendages which conceal the anterior aspect of the point of attachment; internal ridge rather high, moderately haired; lower external margin of the ear voluminous, forming a very considerable pocket, which when extended projects a distance on each side of the head equal to the thickness of the same; antitragus longitudinal, low, rounded; tragus with the apical appendage subspatulate, the median whorl thickened internally, basal lobe truncate and more developed than in *M. blainvillii*. Eye small, with a large V-shaped warty projection placed posterior to it, below the axis of the ocular opening. Nostrils oval, slanting upward and outward, the whole arrangement of callous pads being similar to *M. blainvillii*, but the internasal pads more robust and the laterals oblong instead of subcircular. Upper lip very fleshy, the incision near the commissure being wide and rounded. Chin-lappet roughly

¹⁵ Oldfield Thomas in epist.

the same in outline as *M. blainvillii*, but the lower margin deeply divided between the two processes, the incision being widened at the end, the margins adjoining these processes but slightly emarginate with the lower angles rounded; surface of lappet similar to *M. blainvillii*. Labial fold very much as in the above-mentioned species.¹⁶

Limbs.—Forearm long, metacarpal of the third finger not reaching the elbow; thumb short and weak. Tibia and femur slender.

Fur.—Fur rather sparse in the region of the nape, the crown of the head being devoid of hair. Upper fur silky, under fur woolly.

Color.—Upper surface prout's-brown, the hair lighter basally, which under tint shows in the sparsely haired region of the nape, imparting a dull ochraceous touch to that portion. Membranes clove-brown. Under surface varying from wood-brown to tawny-olive.

Skull.—Rather large, strongly inflated, brain-case capacious, gently curving down into the rostrum which is strongly inflated posteriorly. Zygoma not bowed, widest posteriorly. Basi-cranial axis forming an obtuse angle with the facial axis.

Teeth.—Middle upper incisors broad, with a faintly bilobed cutting edge; outer upper incisors minute, placed in close proximity to the middle incisors. Lower incisors arranged in a semi-circle, each finely trilobed. Upper canines long, slightly divergent at the tips. Lower canines rather long, divergent, with the cingulum well marked posteriorly. First upper premolar low, conical, slightly directed inward; second premolar with the external cusp long, hastate, the internal portion forming a low rounded shoulder, the basal proportions of the tooth being longer (on the external margin) than wide. Lower premolars conical, the second shorter in lateral outline than the first or third, the latter more attenuate than the others. Upper molars broad, the first and second with W-shaped external cusps, the internal paraconoid ridge heaviest anteriorly, posteriorly low and free from the external cusps; third molar with a V-shaped pattern, the metacone not being developed,

¹⁶ Dobson's figure (*Catal. Chiropt. Brit. Mus.*, Pl. XXIII, fig. 5) of this species shows the chin-lappet quite different in form from that of *M. blainvillii*. This is not so apparent in my specimens and was probably due to a disarrangement in the specimen figured.

and the internal cusp parahypoconoid in relation. Lower molars each with five cusps, the W-shaped disposition not being so strongly marked as in the upper molars, the metahypoconoid and protoparaconoid cusps more elevated than the remaining connecting ridges.

Measurements.—Average of three dried skins: Length of head and body, 71 mm. (67.5–74.7); forearm, 53.2 (52.7–54); tibia, 21.1 (21–21.5); foot, 9.6 (9.5–10).

Remarks.—This species can be readily distinguished from *blainvillii* by the characters given above. From *m. intermedia* it is separated by the freer and less-crowded first upper premolar. The subspecies *senicula* is distinguished by the form of the second upper premolar.

Specimens Examined.—Three skins with skulls:

Merida, Yucatan (two) (U. S. N. M.).

San Juan Bautista, Tabasco, Mexico (one) (U. S. N. M.).

***Mormoops megalophylla senicula* n. subsp.**

1870. *Mormoops* (*Blainville*?) Dugés (not of Leach), La Naturaleza, I, p. 137. (Guanajuato.)

1879. *Mormops megalophylla* Alston, Biol. Cent.-Amer., Mamm., p. 37. (Part.) (Mirador.)

1900. *Mormoops megalophylla* Mearns (not of Peters), Proc. Biol. Soc. Wash., XIII, p. 166. (Fort Clark, Texas.)

Type.—Adult ♀; Fort Clark, Kinney county, Texas. No. 84,801 U. S. National Museum. December 3, 1897. Collected by Dr. E. A. Mearns.

Distribution.—Southern Texas (type locality only known record), northern and central Mexico, probably intergrading with the typical form to the south of the central plateau country.

General Characters.—This form differs from the typical form of *megalophylla* in the much heavier and broader second upper premolar, which bears a very heavy and wide internal shoulder. The forearm seems to average slightly longer, but this was rather unsatisfactorily determined as all the available specimens of the typical form are skins.

Teeth.—Essentially as in *megalophylla* except for the form of the second upper premolar. This tooth is broader than the length of the labial border, the internal portion of the tooth is much more extensive, a broad rounded shallow shoulder being formed, which development is comparatively slight in *megalophylla*.

Color.—Upper parts broccoli-brown, the whole with a faint

silvery suffusion; hair of the nape and upper part of the head basally pale ecru, which tint shows through the general color, producing a lighter appearance in those regions. Lower surface wood-brown, becoming ecru on the sides and flanks. Membranes hair-brown.

Measurements.—Type (collector's measurements): "Length, 90;¹⁷ tail vertebræ, 28; alar expanse, 373; finger (longest), 90; head, 17; forearm, 56 mm." Average of thirteen alcoholic specimens: Length of head and body, 58.8 mm.; head, 16.7; ear, 15.9; tragus, 6.3; forearm, 53.3; thumb, 7.6; third finger, 93.1; tibia, 21.6; calcaneum, 21.8; foot, 9.5; tail, 25.8.

Remarks.—This form can readily be distinguished from typical *megaloophylla* and *m. intermedia* by the form of the second upper premolar. Its distribution seems to coincide with the tableland of Mexico (and its more northern remnant), though two specimens from Tampico are perfectly typical.

Specimens Examined.—Seventeen—two skins, thirteen alcoholics, two skulls—all from the United States National Museum:

Fort Clark, Tex. (1).

Tampico, Tamaulipas, Mex. (2).

Guanajuato, Guanajuato, Mex. (1).

Mirador, Vera Cruz, Mex. (8).

Orizaba, Vera Cruz, Mex. (2).

Morelos, Mex. (3).

Mormoops megalophylla intermedia (Miller).

1900. *Mormoops intermedia* Miller, Proc. Biol. Soc. Washington, XIII, p. 160. October 31, 1900.

Type Locality.—Cave at Hatto, north coast of Curaçao, West Indies. Type, adult female, No. 102,174 Coll. U. S. National Museum.

Distribution.—Apparently limited to the island of Curaçao, where it frequents "caves and rock crevices in all parts of the island."

General Characters.—Differing from typical *megaloophylla* in the smaller general size, and the greater size and general crowded condition of the first upper premolar.

Teeth.—Essentially as in *M. megalophylla*, but differing in the thicker and heavier first upper premolar, which tooth is crowded

¹⁷ This without doubt includes the tail.

between the canine and second premolar, completely filling the space.

Color.—In describing the color one cannot do better than quote the original description—"Brown phase: entire dorsal surface sepia, the fur paler beneath the surface and each hair tipped with light drab. The drab tips produce a distinct bloom in certain lights. Under parts very pale yellowish broccoli-brown, lightest on belly, flanks and pubic region, faintly darker across chest. Red phase: like brown phase but entire pelage suffused with cinnamon. Pale phase: light salmon-buff above and below, becoming more red about shoulders and head. Ears and membranes dark brown in all three color phases." The brown phase appears to be simply an intermediate between the two extremes.

Measurements.—Average of seven alcoholic specimens: Length of head and body, 55.5 mm.; head, 16.7; ear, 14.5; tragus, 5.4; forearm, 50.8; thumb, 6.3; third finger, 86.9; tibia, 20.9; calcaneum, 21.7; foot, 9.7; tail, 23.7.

Remarks.—In view of the slight differentiation of this form I prefer to consider it a subspecies and not a full species. Future study may show that it is strictly insular and that no intergradation occurs, but I prefer to treat it on the same basis as the other newly recognized form of this group, the dental characters of which are even more striking, though the difference in size is not so apparent.

Specimens Examined.—Fourteen—six skins, seven alcoholics, one skull—all from the U. S. National Museum:

Curaçao, West Indies (14).

Comparative Measurements (in millimeters).

	Length of head and body	Head.	Ear.	Tragus.	Forearm.	Thumb.	Third finger.	Tibia.	Calcaneum.	Foot.	Tail.		Total length of skull.	Greatest zygomatic width.	Interorbital width.	Height at base of 2d premaxilar.	Height of brain-case.	Width of palatal constriction.	Length of palate from ant. pal. foramen.	Width of palate with teeth.
Average of two specimens of <i>M. blainvillii</i> , Jamaica. (Alc.)	50	15.7	15	4.2	45	6.2	81.5	20	19.5	8.1	28.3	One skull meas.	14	8.5	4	3.7	7.5	1	8.1	6
Average of seven specimens of <i>M. b. cinnamomea</i> , Mona Island. (Alc.)	50	16.6	14.7	3.7	43.4	6.3	80.5	19.2	19	8.5	25.4	Average of two skulls.	13.5	8.4	2.4	7		.8	8	6
Average of three specimens of <i>M. megalophylla</i> , Tabasco, Yucatan. (Skins.)					53.2			21.1		9.6		Average of three skulls.		9.5	2.5		1		8	6.9
Average of thirteen specimens of <i>M. m. senicula</i> , Texas, north and central Mexico. (Alc.)	58.8	16.7	15.9	6.3	53.3	7.6	93.1	21.6	21.8	9.5	25.8	Average of four skulls.	15	9.6	5.4	8		1.5	8	6.9
Average of seven specimens of <i>M. intermedia</i> , Curaçao. (Alc.)	55.5	16.7	14.5	5.4	50.8	6.3	88.9	20.9	21.7	9.7	23.7	Average of seven skulls.	14.2	9.3	5.1			1.5	7.6	6.5